

Review with Clinical Cases: Thoracic Wall, Lungs, and Mediastinum

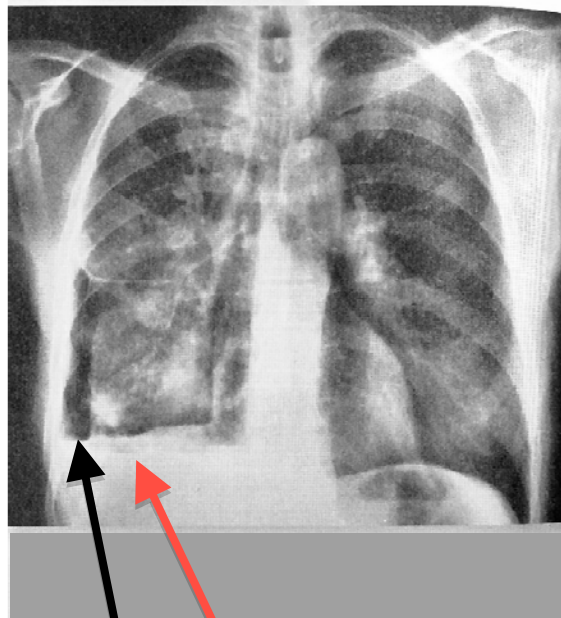
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•Case I

•Patient: 35 year old man injured in a robbery attempt. He was shot. The bullet entered the right fifth intercostal space 6 cm lateral of the midline.

•Symptoms:

- Poor heart and breath sounds on the right side of chest
- Chest X-ray showed partial “white out” on the right side



on right side you can see white stuff and diaphragm is raised, the white material is blood, partially collapsed lung

•Diagnosis: Pneumothorax and hemothorax
tearing of lung blood in lung

•Questions:

- Why did the X-ray white out on the right side?
blood filling lungs
- How would you treat this condition?
aspirate blood, thoracentesis, costal diaphragmatic recess
- What would it suggest if the patient experience increasing difficulty in breathing and the heart beat shift to the left?

pressure on the right lung pushing on the heart

•Case 2

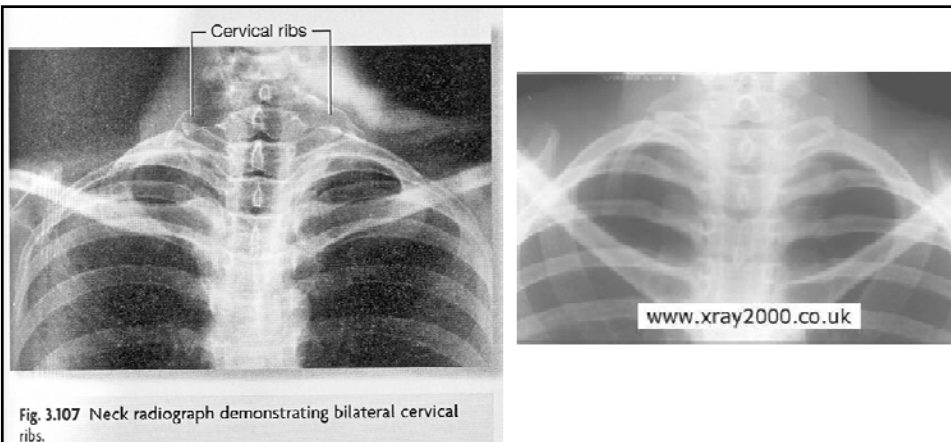
•Patient: An 18 year old male

•Symptoms: Black areas of skin develop on the tips of his fingers of his left hand. The clinician decides these are produced by emboli blocking the flow of blood in arterioles in the dermis of the skin.

•Questions: What could cause the formation of arterial emboli?

- notice cervical rib, touching lumen of subclavian artery causing blood turbulence, activating platelets, which caused emboli.

treatment remove the rib



A plane neck radiograph reveals a cervical rib which is producing arterial compression and turbulence at the subclavian artery which is causing sporadic platelet activation resulting in the formation of small emboli that become trapped in the capillaries of the hand

•Case 3

•Patient: An 35 year old female

•Symptoms: Recent weight loss (14 lbs in 2 months)

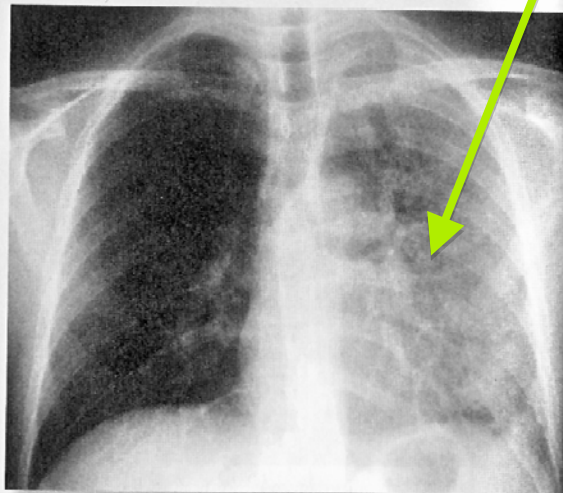
- chronic cough with blood tinged sputum
- Left side chest pains
- Recently she has been having night sweats

•Examination: Low grade fever

- Tachypnea
- Chest percussions are dull on left side, right side displays resonant percussion
- Auscultation reveals decreased breath sounds on the left side
- Chest X-ray shows

left side is fucked

must be fluid in the lung bc percussion



pneumonitis in the left lung

A 45-year-old female is admitted to the hospital with difficulty breathing. Radiographic examination reveals a tumor invading the lung surface anterior to the hilum. Which nerve is most likely compressed by the tumor to result in dyspnea?

- ☒ A. Phrenic
- B. Vagus
- C. Intercostal
- D. Recurrent laryngeal
- E. Cardiopulmonary

A 62-year-old male patient expresses concern that his voice has changed over the preceding months. Imaging reveals a growth located within the aortic arch, adjacent to the left pulmonary artery. Which neural structure is most likely being compressed to cause the changes in the patient's voice?

- A. Left phrenic nerve
- B. Esophageal plexus
- ☒ C. Left recurrent laryngeal nerve
- D. Left vagus nerve
- E. Left sympathetic trunk

A 17-year-old girl is admitted to the hospital with severe dyspnea. Physical examination reveals that the patient is suffering from an asthma attack, with associated bronchospasm. Which of the following nerves is responsible for the innervations of the bronchial smooth muscle cells?

- A. Greater thoracic splanchnic
- B. Phrenic
- ☒ C. Vagus
- D. Intercostal
- E. Lesser thoracic splanchnic

A 22-year-old woman had undergone elective breast enhancement, with the insertion of 250-ml saline bags bilaterally. This resulted, unfortunately, in loss of sensation bilaterally in the nipples and areolas and some reduction of sensation of the skin from the areolas laterally to the midaxillary lines. Which of the following nerves were most likely subject to iatrogenic injury?

- A. Anterior cutaneous branches of second and third intercostal nerves
- ☒ B. Anterior and lateral cutaneous branches of the fourth intercostal nerves
- C. Lateral pectoral nerves
- D. Cutaneous branches of the second thoracic spinal nerves (intercostobrachial nerves)
- E. Lateral cutaneous branches of the second and third intercostal nerves

A 51-year-old male is admitted to the hospital with severe dyspnea. Radiographic examination reveals a tension pneumothorax. Adequate local anesthesia of the chest wall prior to insertion of a chest tube is necessary for pain control. Of the following layers, which is the deepest that must be infiltrated with the local anesthetic to achieve adequate anesthesia?

- A. Endothoracic fascia
- B. Intercostal muscles
- ☒ C. Parietal pleura
- D. Subcutaneous fat
- E. Visceral pleura

A 55-year-old female visited her doctor because of a painful lump in her right breast and a bloody discharge from her right nipple. Radiographic studies and physical examination reveal unilateral inversion of the nipple, and a tumor in the right upper quadrant of the breast is suspected. In addition, there is an orange-peel appearance of the skin (peau d'orange) in the vicinity of the areola. Which of the following best explains the inversion of her nipples?

- A. Retention of the fetal and infantile state of the nipple
- B. Intraductal cancerous tumor
- ☒ C. Retraction of the suspensory ligaments of the breast by cancer
- D. Obstruction of the cutaneous lymphatics, with edema of the skin
- E. Inflammation of the epithelial lining of the nipple and underlying hypodermis

A 47-year-old male is admitted to the emergency department, due to severe dysphagia. Edema of the lower limbs is apparent upon physical examination. A barium sulfate swallow imaging procedure reveals esophageal dilation, with severe inflammation, due to constriction at the esophageal hiatus. What is the most likely cause of the severe edema of the lower limbs?

- A. Thoracic aorta constriction
- ☒ B. Thoracic duct blockage
- C. Superior vena caval occlusion
- D. Aortic aneurysm
- E. Femoral artery disease

In coronary bypass graft surgery of a 49-year-old female, the internal thoracic artery is used as the coronary artery bypass graft. The anterior intercostal arteries in intercostal spaces three to six are ligated. Which of the following arteries will be expected to supply these intercostal spaces?

- A. Musculophrenic
- B. Superior epigastric
- ☒ C. Posterior intercostal
- D. Lateral thoracic
- E. Thoracodorsal

A 25-year-old man is admitted to the emergency department with a bullet wound in the neck just above the middle of the right clavicle and first rib. Radiographic examination reveals collapse of the right lung and a tension pneumothorax. Injury to which of the following respiratory structures resulted in the pneumothorax?

- A. Costal pleura
- ☒ B. Cervical pleura
- C. Right primary bronchus
- D. Right upper lobar bronchus
- E. Mediastinal pleura

A 34-year-old male unconscious patient is admitted to the hospital. His blood pressure is 85/45 mm Hg. A central venous line is ordered to be placed. During subsequent radiographic examination a chylothorax is detected. Which of the following structures was most likely accidentally damaged during the placement of the central venous line?

thoracic duct drains into left subclavian and jugular

- A. Left external jugular vein
- ☒ B. Site of origin of the left brachiocephalic vein
- C. Distal right subclavian vein
- D. Proximal part of right brachiocephalic vein
- E. Right external jugular vein

A 17-year-old girl is admitted to the hospital with dyspnea and fever. Radiographic examination reveals lobar pneumonia in one of the lobes of her right lung. During stethoscope examination at the level of the sixth intercostal space on the right posterior thoracic wall, rales (or crackles) are heard and dull sounds are produced during percussion at this site. Which of the following lobes is most likely to be involved by pneumonia?

- A. Upper lobe of the right lung higher than that for upper
- B. Middle lobe of the right lung 4 or 5 for middle
- ☒ C. Lower lobe of the right lung
- D. Lower lobes of the right and left lungs
- E. Upper lobes of the right and left lungs

A 34-year-old male with a complaint of sharp, localized pain over the thoracic wall is diagnosed with pleural effusion. A chest tube is inserted to drain the effusion through an intercostal space. At which of the following locations is the chest tube most likely to be inserted?

- A. Superior to the upper border of the rib
- B. Inferior to the lower border of the rib
- ☒ C. At the middle of the intercostal space
- D. Between the internal and external intercostal muscles
- E. At the jugular notch

A 57-year-old male is admitted to the emergency department after he was struck by a truck while crossing a busy street. Radiographic examination reveals flail chest. During physical examination the patient complains of severe pain during inspiration and expiration. Which of the following nerves is most likely responsible for the sensation of pain during respiration?

- A. Phrenic
- B. Vagus
- C. Cardiopulmonary
- ☒ D. Intercostal
- E. Thoracic splanchnic

has to be somatic
diaphragm pain referred
to upper shoulder
supra-scapular nerve

A 3-year-old male who fell from a tree complains of severe pain over the right side of his chest because of a rib fracture at the midaxillary line. He is admitted to the hospital due to his difficulty breathing. Radiographic and physical examinations reveal atelectasis, resulting from the accumulation of blood in his pleural space and resulting hemothorax. What is the most likely source of bleeding to cause the hemothorax?

- A. Left common carotid artery
- ☒ B. Intercostal vessels
- C. Pulmonary arteries
- D. Pulmonary veins
- E. Internal thoracic artery

A 29-year-old man is admitted to the hospital with great difficulty breathing after an automobile accident. Radiographic examination reveals no fractured bones but a mediastinal shift is noted. During physical examination he has no signs of external injuries, but the dyspnea is becoming progressively worse. Which of the following conditions would best describe this case?

- A. Flail chest with paradoxical respiration
- B. Emphysema
- C. Hemothorax
- D. Spontaneous pneumothorax initially it was but turned in to the tension
- ☒ E. Tension pneumothorax bc mediastinal shift

A 34-year-old patient had been diagnosed earlier in the week with Guillain-Barre syndrome. He is now in extreme respiratory distress. His thoracic wall contracts and relaxes violently, but there is little movement of the abdominal wall. The degenerative disease has obviously affected the muscle that is most responsible for increasing the vertical dimensions of the thoracic cavity (and pleural cavities). Which of the following is the most likely cause of his disease?

- A. Paralysis of his intercostal muscles and loss of the "bucket handle movement" of his ribs
- B. Generalized intercostal nerve paralysis that resulted in loss of the "pump handle movement" of his ribs
- C. Paralysis of his medial and lateral pectoral nerves, interrupting the function of his pectoralis major muscles, an important accessory muscle of respiration
- D. Paralysis of his sternocleidomastoid muscles
- ☒ E. Degeneration of the myelin of his phrenic nerves